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# Revealing failures on knowledge sharing: An empirical investigation

## **Summary**

While knowledge sharing can help organizations to succeed, it can also prevent unanticipated failures that affect both organizations' and individuals' effectiveness. Such failures may be linked to employee ignorance and knowledge-gaps, and can have both cost-intensive and resource-wasteful consequences. Based on a case study of a multinational organization and using both qualitative and quantitative data, we identify six critical failure factors (CFFs), which have an impact on knowledge sharing. We also reveal the underlying role of employee ignorance as a failure control mechanism. The study provides insights into the importance of identifying these failures when sharing knowledge and proposes relevant mitigation strategies. It also uncovers hidden ramifications of ignorance to help firms avert dysfunctional knowledge sharing behaviors from escalating into dangerous and less manageable issues.

**Key words**: knowledge sharing, critical failure factors (CFFs), employee ignorance

Track: Knowledge and Learning (12)

#### 1. Introduction

Practitioners in organizations often neglect the study of failure (Storey and Barnett, 2000) when investigating factors that can improve organizational performance. However, attempts made by organizations to manage their knowledge and share it effectively within their boundaries may sometimes prove detrimental to an organization's effectiveness when failure factors are ignored or underexplored. Only habitually looking at what makes organizations successful and ignoring failure factors may restrict organizations from achieving their full potential for a number of reasons. These might include inconsistent application, misuse and misinterpretation (Chong, 2006). Furthermore, demands for innovative product developments often render organizational knowledge and inferential rules obsolete. Hence, complacency in relying on obsolete knowledge deters learning in a dysfunctional way, that, in turn, can lead to overconfidence or a superficial understanding of what success looks like (Wood and Lynch, 2002).

Reviewing the extant knowledge sharing literature, CFFs associated with knowledge trajectories (i.e., the trajectory over time of an organization in relation to a stated knowledge goal), both at organizational and individual levels, are not adequately identified or discussed (e.g., Braganza and Möllenkramer, 2002; Fontaine and Lesser, 2002; Malhotra, 2004). Revealing failures and their antecedents when organizations share their knowledge, ensures organizational effectiveness for several reasons: It can help them to become aware of potential knowledge gaps that may persist within their structures; it might enable them to predict and avert dysfunctional knowledge sharing scenarios; it might prevent them from escalating into dangerous and less manageable issues. To develop a better understanding of organizational knowledge sharing effectiveness and prevent situations of knowledge deficit, we need to explore whether CFFs can help organizations to better manage the knowledge they possess, at individual and organizational levels, or that which is facilitated by external parties.

### 2. Conceptual framework and research propositions

This paper investigates CFFs in the context of knowledge sharing and addresses the following research question: What CFFs dysfunction knowledge sharing, thus affecting both organizational and individual effectiveness? The focus of this study is to gain further insights into what can cause knowledge sharing failures, inflexible knowledge sharing strategies and ineffective knowledge sharing mechanisms, and how practitioners can reduce or even mitigate such dysfunctions. It contributes to the Knowledge Management (KM) literature by identifying a range of empirically validated CFFs, which complement the extant work on the complexity of knowledge sharing. Furthermore, in line with existing research on managing the unknown, it provides a more nuanced understanding of why both organizations and their people often fail to share knowledge within their boundaries by also considering the role of ignorance in these failure-prone situations.

# 3. Methodology and current research status

#### 3.1 The research context

We conducted a single-case study analysis of an organization developing and implementing supportive knowledge sharing mechanisms to promote effectiveness at both organizational and individual levels. Our aim was to build theoretical concepts by observing real structures, events and behaviors, which have not been extensively investigated in the past (Schein, 1987; Weber, 1947). In doing so, we adopted a case-based inductive approach, using the five-stage research process model (i.e., research question definition, instrument development, data gathering, analysis and dissemination) (Stuart *et al.*, 2002; Voss *et al.*, 2002; Yin, 2003).

We selected an Aerospace and Defense organization, which employs over 80,000 employees across the globe and has an annual turnover of around £18 billion. The employees are highly skilled within their respective field and fully aware of the importance of appropriately sharing knowledge. The organization has attempted to create a supportive environment in order to accommodate knowledge exchange, transfer and sharing on a daily basis. Two studies were conducted, applying mixed methods (qualitative and quantitative respectively) aiming at giving a broad focus and collect more information about the phenomenon (Patton, 2002) and these are presented in detail in the following sections.

### 3.2 Sources of evidence and data analysis

Data for this study were selected in two phases: The first data set included nine indepth, semi-structured interviews with highly skilled personnel from an Aerospace and Defence organization. The sampling was purposeful, aiming at collecting appropriate information to explore failures when organizations share knowledge. The interviews were conducted at a time when the organization was starting to introduce new initiatives and implementing appropriate infrastructure to promote knowledge sharing. A set of well-defined interview questions, focusing on the research objectives drawing on the work of Connelly and Kelloway (2003) was developed. Whereas, a number of subquestions for further probing were also included in the study instrument.

Each interview lasted between 40 to 45 minutes and all interviews were recorded, after receiving the consent of the interviewees, with a digital voice recorder. Text interpretation and content analysis was conducted using ATLAS.ti due to its

variety of sophisticated tools for analyzing large bodies of textual data. Coding uncovered patterns, themes and categories and identified significant linkages to both theory and practice.

The second data source included 375 successfully completed questionnaires from participants from more than fifteen different business areas across nine different countries around the world employed at the same organization. A web-based survey tool was used, and relevant links were sent to 1,000 employees. The survey tool included both closed and open-ended questions. This method was selected since it not only enabled both quantitative and qualitative data to be collected, but to also improve the overall response rate and eliminated the potential for data entry and coding errors (Giddings and Grant, 2006).

The sample consisted of employees from more than fifteen different business areas (e.g. military air and information, avionics, maritime, land, electronic systems, shared services, business winning, security and space) and across nine different countries around the world, including the United States, Sweden, Australia, Saudi Arabia, India and the United Kingdom. Overall, 375 questionnaires were successfully completed and returned giving a sufficient return rate of 37,5%. The sample was representative of the population in terms of age, gender, geographical region, and hierarchical level. SPSS was used to analyse the results of the survey and closely link outcomes to the specifics of each of the research questions. Data were analysed using descriptive statistics and content analysis.

#### 4. Initial findings/ results

### 4.1. Demographic Characteristics

Study 1: The majority of the participants were males (eight males and one female). The average age of respondents was 40.5 years old, working at the company for over 6 years on average.

Study 2: Among the respondents, 87 percent were males (reflecting the continuing gender gap in the engineering sector). The vast majority of the participants surveyed (82 percent) were over the age of forty-one. In addition, 69 percent were found to be affiliated with the organization for more than ten years. The survey respondents reported a broad range of experience and hierarchical levels. Specifically, the participants included, amongst others, directors, engineering authorities, commercial managers, project managers, business leaders and senior planning managers.

# 4.2. Initial findings

Both studies identified and confirmed six CFFs on how knowledge can be effectively shared within organizations that have hitherto not been seen in the literature: Initially, the qualitative data of Study 1 identified six CFFs which have as follows: (i) staff churn; (ii) limited time availability; (iii) unclear knowledge sharing goals; (iv) lack of perceived encouragement; (v) ill-formalized knowledge-sharing processes; (vi) low quality training and cutbacks, (vii) the role of employee ignorance as an underlying mechanism.

Table 1 provides a summary of the findings derived from Study 1.

[Place Table 1 around here]

The survey findings (Study 2) confirmed the six previously identified CFFs, which affect knowledge sharing (i.e. staff churn; limited time availability; unclear knowledge sharing goals; lack of perceived encouragement; ill-formalized knowledge sharing processes; low-quality training and cutbacks). In addition, participants have also highlighted the underlying role of employee ignorance, which is linked to the aforementioned CFFs.

Table 2 provides a summary of the findings derived from Study 2.

[Place Table 2 around here]

#### 5. Brief Discussion

Staff churn: Given the aforementioned average age of employees in study 1, it is noted that the ageing workforce is one of the biggest challenges faced by the organization in the coming years, leading to lack of innovation and creativity. While, in study 2, staff churn is reflected on the diversified workforce in terms of the knowledge they possess, their perspectives, attitudes, beliefs, experiences and the way they perceive not only the importance of knowledge sharing, but also how it is applied by the organization.

Limited time availability: The study 1 findings indicated that the time required for employees to share the organizational knowledge they possess prevents them from participating in such activities. This was also reflected in the attitudes expressed by the majority of interviewees regarding their willingness to share organizational knowledge.

Among the Study 2 participants, 26 percent expressed their unwillingness to be involved in knowledge sharing activities since they cannot spend time unless there is a 'budget code' attached. In addition, they stated, amongst others, that the time needed to devote to sharing knowledge with their colleagues is very limited, such that it prevents them from participating in knowledge sharing activities, especially when they are asked to accomplish tasks within predefined time constrains.

Unclear knowledge sharing goals: It was evident from Study 1 that employees may not harvest the full benefits of knowledge sharing due to the lack of clear goals, the complex overall structure of reporting lessons-learned and the bureaucratic communications methods used within the organization.

The survey findings of Study 2 led us to support that employees often experience ambiguity when they are engaged in knowledge sharing activities. They do not receive clear information of the knowledge to be shared, to whom and to what extent. Such that, they are often confused, thus perceiving the process itself as inconsistent. In addition, they often perceive the quality of the knowledge to be shared as questionable, obsolete or misleading, making them feel confused about the organizational intentions to share knowledge.

Lack of perceived encouragement: The majority of those who were interviewed in Study 1 were lacking encouragement and therefore could not achieve effective knowledge sharing. There was a consensus among participants that managerial direction was often found to be missing. The study clearly indicated that this dysfunctional mismatch was found between high-level knowledge sharing goals and the actions of lower level managers.

The Study 2 outcomes indicated that only a quarter of participants felt that they do not perceive encouragement by their supervisor to exchange knowledge. Specifically, most of the times they believe that the supervisors treat the knowledge to be shared as

their own and driven by such feelings, employees, often, perceive their personal knowledge as "power" and prefer to keep it to themselves.

Ill-formalized knowledge sharing processes: The Study 1 survey itself was partly prompted by the organization's interest in whether their own intranet systems were being used effectively by their employees to share knowledge. The majority of employees highlighted that despite the existence of files stored in the intranet, they were not comfortable undertaking tasks without frequent referral to printout documentation. In situations where new knowledge was generated, employees had to rely on hard copies due to the limitation of existing IT infrastructure. However, given that most of the material was uploaded centrally, employees were often found to be unaware of new knowledge being generated. It was also clear that documentation processes, as well as knowledge sharing processes should be formalized and reviewed regularly. This would enable management buy-in, facilitate knowledge sharing, and avoid any inefficiency or disruption to the smooth running of the organization's operations.

The Study 2 findings indicated that a considerable number of employees found it difficult to share knowledge without formalized processes being in place. Formalized knowledge sharing processes ensure that the knowledge to be shared is updated and targeted, as well as appropriately applied. As the protection of the organization's knowledge assets was raised by many participants, well-designed formalized processes were perceived as safe-guard mechanisms for a firm's intellectual capital. Even more, formalization in knowledge sharing was found to minimize risks of employees' ignorance about the recipients of the knowledge they share.

Low quality training and cutbacks: In Study 1, most of the training programs provided appeared not to be directly focused on problems or knowledge sharing issues that managers were facing in the organization. The quality of training that employees had received for implementing knowledge-sharing was found to be mostly average or poor across the organization.

The Study 2 participants clearly stated that the training materials provided were oriented to the requirements and skillset of a sub-group of employees but did not meet the needs of all employees undertaking it. In addition, they were not receiving adequate and appropriate training to make use of the available tools to share knowledge; they were not provided with adequate feedback as well as they had not received adequate advice on how to share knowledge with their colleagues appropriately.

The underlying role of employee ignorance as a failure control mechanism of all of the aforementioned CFFs: Employee ignorance was found to be a control mechanism for the six aforementioned CFFs. Specifically, there was clear evidence to support that ignorance was affecting employees' motivation and ability to share knowledge. Both Study 1 and Study 2 participants were found to be unaware of either existing processes and available tools, or perceptions of their immediate supervisors regarding the knowledge sharing process implemented by their organization. They were also found to not know how their personal knowledge will be treated by their immediate supervisor. Even more, given the tight time-constraints they experience to accomplish their daily tasks, employees were not able to determine whether they should devote time to knowledge sharing activities. Employees were also found to be unaware of the duration of the process itself due to the lack of well-defined and formalized procedures.

Further analysis of the survey results showed a clear positive correlation between those employees who were aware of reward mechanisms and those who felt they received sufficient credit when sharing knowledge. It is arguable that this indicates that the reward mechanisms in place were at least partially effective, with lack of awareness and appreciation by managers being the principle issues.

# 5. Work in progress

To successfully complete our study and support a comprehensive understanding regarding the CFFs on knowledge sharing we are in the phase of developing a survey instrument so that to, firstly, identify which of the CFFs affects more the process of knowledge sharing. Secondly, to test for both moderating and moderated effects in the relationship between knowledge sharing and CFFs. And, thirdly, to evaluate which of the factors confirmed by the content analysis of study 2 are applicable in other knowledge-intensive industries operating in others geographical areas than UK. In doing so, a large-scale quantitative survey will also follow. In this way, we will also achieve greater generalizability of our findings by also looking more closely at the effect of geographical location within the context of CFFs.

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# **Appendices**

Table 1: Sample of employee quotes for CFFs in Study 1

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Staff Churn	"People do not get used to think innovative way. They prefer usually copy and use others knowledge instead of being creative by themselves. Most of my experience, knowledge is stolen and see my ideas in different purpose and I fall behind. I even could not get Patent to my own IP ideas and tool inside the organization".
Limited time availability	"Can use up a lot of time with little immediate visible benefit. Detracts from the milestone achievement upon which we all as individuals are measured";
	"Could waste people's time by continual interruptions for people trying to determine if they know something that they do not".
Unclear knowledge sharing goals	"We need a better way to track and share lessons learned. There is very little downside to sharing knowledge other than it might be misunderstood if it is just in a quick written form (i.e., always good to see if actual person / group with the knowledge can be available when needed for details)".
Lack of perceived encouragement	"There is too much conflicting information sometimes. Senior management also like to do their own thing";
	"Knowledge Sharing is viewed by management as possible waste of time and lack of task focus".
Ill-formalized knowledge sharing processes	"Is it vetted (i.e., is the knowledge correct or are you getting bad data)?  Hard to find the right data at the right time (too much or not enough)";
	"Finding examples of similar work is the quickest way to find the people ("who put this together?" usually leads to a good contact). It would be a tremendous knowledge sharing benefit if there were more company-wide searchable databases for Proposals, Contract Deliverables, Engineering Design Reviews, and Program review materials along with point-of-contact information that were universally accessible. Would also be good to have a rating system (1 to 5 stars) to tap into the 'wisdom of crowds'".
Low quality training and cutbacks	"I think we place a lot of emphasis on the theoretical aspects of what we're trying to do. There tends to be a lack of emphasis on the how in training. You don't tend to get a sort of real life demonstration of actually somebody who is in a situation doing the thing";
	"I think there is a lack of training delivered to middle managers"
Employee ignorance	"There are no real mechanisms for rewarding any knowledge sharing. I already do work for parts of the organization other than my business line, and I am effectively doing this work out the goodness of my heart";
	"There isn't any database of perhaps Learning from Experience, things that tell people what's gone right, what's gone wrong. There isn't anywhere that pulls our knowledge together";

"I think lot of us struggle with identifying what Knowledge Sharing tools we use, because we're not aware of any specific Knowledge Sharing tools";

"I'm not aware of any knowledge sharing tools. I know the business had people who were looking at Knowledge Management but no idea how they went about it. No idea what tools they used or what tools were available. The only tools that I really use are my own eyeballs"

## Table 2: Illustrative quotes for CFFs in Study 2

#### **Staff Churn**

"Availability of others to shares, clarity of the information shared. Out of date information"; "Inconsistencies with correct knowledge & Diluted / tainted 3rd or 4th generation knowledge sharing"; "Perception of bespoke needs result in people not believing they need to share"; "You have the slight possibility to swamp people with information and create greater indecision"; "People aren't seen as 'specialized' or 'knowledgeable' if they share all their knowledge, therefore may not like appearing of 'equal status' to others (of less experience, younger, more junior in the org"; "Too many people with input, not agree on things"; "Stifle intellectual independence / critical thinking. Total knowledge is not just knowing the answer; but experiencing the journey to derive the answer"; "Experience can be taken out of context and mis-applied"; "Too many people with opinions rather than hard facts"; "Knowledge can become outdated and obsolete – it can sometimes be difficult to identify a knowledge owner with up to date information"; "Can be a bit overwhelming at times?".

# Limited time availability

"Time find the appropriate information"; "It takes time to establish links. Time pressure on task which limit sharing"; "Can use up a lot of time with little immediate visible benefit. Detracts from the milestone achievement upon which we all as individuals are measured"; "Takes time away from primary duties"; "Virtually impossible to capture return on investment for time spend knowledge sharing. Difficult to define what knowledge sharing is and what it encompasses"; "Could be a lot of time for minimal gain. Often needed when there is minimal time to do it"; "There is a perception it costs time and money and does not repay the business.....shame as this is a most short sighted view"; "The time it can take to get one bit of information that you need"; "End up doing other people's jobs and spend so much time sharing/coaching with no recognition that you have your own milestones to meet"; "It takes a great deal of time to capture knowledge in the written form"; "Having the time to do it effectively is difficult"; "Added pressure on time / distraction from priority work"; "The time required is not always recognized and made available - it's often seen as a diversion activity rather than a value-adding one"; "People don't always take the time to confirm relevance"; "Time allowed within 'business as usual' daily tasks to seek and share experiences & knowledge"; "Requires an investment of time"; "Takes too much time from own work"; "Too much time talking and not enough time doing"; "Too much at times. Not enough time to attend forums"; "Finding the time to share and the appropriate medium for sharing"; "Sometimes difficult and time consuming to find the needed information"; "Time consuming if the rationale for the sharing is not clear".

# Unclear knowledge sharing goals

"Sometimes knowledge obtained from different sources can be conflicting"; "Inconsistency"; "Fragmentation and consistency"; "You don't know what you should know or what you're missing from the knowledge transfer"; "Misinterpretation and the danger of thinking you know more that you do (both directions)"; "Little, although information overload can be a problem"; "If knowledge is passed on incorrectly or is misunderstood and used in the wrong way"; "Potential to dilute the message if what has been shared is not validated"; "Inaccurate facts perpetuated"; "Need to be sure that the knowledge is relevant and accurate"; "Sometimes it's only people

views that are shared"; "Possible distraction with other goals"; "Sharing knowledge can improve processes etc but can lead to debates where no better way forward is agreed"; "Becoming distracted with knowledge that is not pertinent to your day to tasks and objectives"; "Ill-informed comment being taken as fact"; "We are good in broadcasting but bad in receiving. People don't share exactly what has happened in a project"; "Usually the hardest thing about FAQ or other knowledge sharing strategies is sorting through the volume to find what is applicable to your case".

# Lack of perceived encouragement

"Taking focus from your core task, you need money to do it"; "Everybody wants it to happen, but it always takes second place to other panics so we don't do it when we should. People need to believe in it and not think the cost of doing it is wasteful"; "Knowledge sharing should be a two-way street. Somebody has to want it. You have to tailor it to meet the individual's needs"; "There are no real mechanisms for rewarding any knowledge sharing. I already do work for parts of [the organization] other than my business line, and I am effectively doing this work out the goodness of my heart"; "Little or no credit is given to source"; "Takes time, viewed by management as possible waste of time and lack of task focus"; "Managers/Business Leaders who then claim knowledge as their own"; "Others take credit for my knowledge and work"; "Information gets distorted and other people take the credit for the information"; "Most people do not do it"; "Can be forced to share for sharing's sake"; "Competition sensitivity, security, export issues"; "Possible wasted time".

#### Ill-formalized knowledge sharing processes

"Interpreted and used incorrectly"; "It is difficult to formalize"; "Too much fluff around the knowledge clogs up communication bandwidth. Lack of logical organization dilutes knowledge into information, data, and opinion at times"; "The assumption that all "good practice" is universally applicable"; "Inappropriate use our application of the knowledge by individuals that do not have a full understanding of the consequences"; "No downside to sharing, only on trying to institutionalize a process that people come to rely upon more than the knowledge itself"; "The administrative effort to ensure that documents which have been shared are kept up to date"; "Passing on a nonstandard practice"; "Is it vetted (i.e. is the knowledge correct or are you getting bad data)? Hard to find the right data at the right time (too much or not enough)"; "Getting the entire enterprise to use a knowledge system. So, unless there is robust roll-out plan, knowledge sharing systems are worthless"; "If the shared knowledge becomes fragmented or incomplete, the recipient may proceed under assumptions that turn out not to be true (for example, sharing a drawing package for a design so it can be built to print but not also sharing the fact that it has safety hazards requiring training to control)"; "The downside is the potential to share information, which should not be shared; for example, when tools may make certain knowledge widely available when it should have been very limited"; "Sharing knowledge is good however the best practices have to be captured properly and integrated centrally"; "We need a better way to track and share lessons learned. There is very little downside to sharing knowledge other than it might be misunderstood if it is just in a quick written form (i.e., always good to see if actual person / group with the knowledge can be available when needed for details)"; "Too much info sharing can cause confusion. Info needs to be managed effectively"; "Not enough suitable tools to do so quickly and to a large enough audience"; "There are no downsides to sharing knowledge. The challenge is having a mechanism for capturing and disseminating knowledge to the right people".

# Low quality training and cutbacks

"Inconsistent advice"; "Inconsistent feedback"; "Few - the issue is about sorting the noise from the gems and then sharing it"; "People do not get used to think innovative way. They prefer usually to copy and use others knowledge instead of being creative by themselves"; "Loss of control of the

usage of the material and lack of feedback"; "When people use the shared knowledge badly or not at all"; "If it's right everyone gets it right, However If it's bad practice, then everyone gets it wrong"; "Plagiarism, people not realising who thought of it first"; "Risk of consuming resources sharing outside appropriate audience".